Sewickley Bridge
(Bridge #1 Ohio River) [redacted]
Spanning the Ohio River
Sewickley
Allegheny County
Pennsylvania

HAER No. PA-53

HAER
PA,
2-SEW,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record

HAER
PA,
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HISTORIC AMERICAN ENGINEERING RECORD

Bridge #1 Ohio River (Sewickley Bridge)

(HAER PA-53)

Location:	Spanning the Ohio River in the vicinity of Sewickley Borough in Allegheny County.
Date of Construction:	1909-1911 for Allegheny County, Rehabilitated 1948. Emergency Repairs 1974, 1977.
Present Owner:	Commonwealth of Pennsylvania Pennsylvania Department of Transportation. Harrisburg, Pennsylvania
Present Use:	The Bridge is a two lane highway and pedestrian structure. At the present time the structure has a posted vehicular load restriction of 3 tons and a speed restriction of 10 miles per hour. Both sidewalks are closed to pedestrians.
Significance:	The Bridge is representive of the type of bridge that was being built at the turn of the century. Also significant, because of the attention it has had since its inception and resultant completion, and because of the direct relationship the bridge holds in the development of and communication between the surrounding communities of Sewickley and Coraopolis.
Historian:	Pennsylvania Department of Transportation, February 1978.

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I. INTRODUCTION

In December, 1977 the Pennsylvania Department of Transportation was authorized to prepare an historical documentation of the Sewickley Bridge for the review of the Historic American Engineering Record. The assembled information comes primarily from community and engineering publications, original contract and construction drawings, subsequent engineering inspection reports, county and state records, personal interviews and economic studies by local educational institutions.

The purpose of the documentation is to explain and record the geographic background, need for and significance of the bridge as it relates to the early and subsequent history of the area and to record the design and construction of an early engineering achievement.

II. HISTORICAL BACKGROUND

Geography of Site

The structure is commonly known as the Sewickley Bridge because of its almost direct attachment at the north end to the Borough of Sewickley and because of the positive relationship the bridge has had in the development of that community.

Sewickley is located on the north shore or right bank of the Ohio River approximately 12 miles downstream from the City of Pittsburgh. Early historical accounts depict the town as a general stopping point for travelers moving by riverboat or overland to and from the City of Pittsburgh.[1] History records the official formation of the community as a town in the early autumn of 1840 with the adoption of the name "Sewickleyville."[2] Thirteen years later the village was incorporated as the Borough of Sewickley. Because of its picturesque location the area grew in popularity through the years and developed into an attractive residential community.[3]

The south end of the Sewickley Bridge lies within the boundaries of the area presently known as Moon Township. The Borough of Coraopolis, also located on the south side is approximately 1 mile up river from the bridge site. In the early 1800's this area was well known for its fine farms.

First Conception of a Bridge

The initial move to erect a bridge at Sewickley dates back to 24 November 1894 when a meeting was held in the local residence of Gilbert Hayes. The meeting call read as follows:

> "To consider the erection of a free bridge over the Ohio River, from the line between the Borough of Osborne and Sewickley to a point in the township road in Moon Township.[4]"

Historical accounts indicate that the meeting was well attended and the principal address was made by the Honorable Judge Morrison Foster, a brother of Stephen C. Foster,[5] and resident of the adjacent community of Edgeworth. The Judge spoke at length on the great need of the adjoining communities for a new river bridge. He pointed out that there was no wagon bridge over the Ohio between Pittsburgh and Wheeling for a distance of 100 miles; that the existing ferry services on the river were unreliable and often abandoned for days during the winter months; that many farmers on the heights north of the town were adverse to coming to Sewickley because of the steep grades to and from the town and river; and that the Ohio River practically divided the county without means of communication. These adversities naturally resulted in financial losses and depreciation of property on both sides of the river. The Judge also noted that the County Commissioners had the power to erect a bridge by an act passed by the General Assembly in 1891.

As a result of this meeting, a committee of 15 members was formed to prepare a formal petition to be presented to the County Court calling for the building of a new bridge.[6]

Later in the following year, 1895, the committee petitioned Judge J. W. F. White, a Sewickley resident who was Judge of the Common Pleas Court No. 2, for a ruling on the construction of a new bridge. The site proposed for the bridge was from the foot of Chestnut Street, Sewickley to Lashell's Ferry in Moon Township. An initial inspection of the site was made by the Court appointed board of viewers, followed by subsequent meetings and reinspections.

The final report the viewers made to the court was adverse to the building of the bridge. The County officials readily accepted the report and disapproved the entire bridge project. The officials argued that they were not convinced of the need for the bridge and that the cost estimate of $400,000 would mean a one mill levy on all County taxpayers for a project that would serve only a few. They also expressed concern that a new County-built bridge in Sewickley would set an undesirable precedent as other communities in the County might petition for similar county bridges and require further increases in tax millage.[7]

It is interesting to note that in 1897 the Rochester-Monaca vehicle bridge over the Ohio River was opened, breaking the long unbridged stretch of the Ohio River between Pittsburgh and Wheeling.

Rebirth of Interest

A renewed interest in a bridge culminated in November, 1906, when residents of the area petitioned for a new bridge to the Court of Quarter Sessions of Allegheny County. Several of the prime movers in the first petition were also foremost in this revival.

The court records show that generally the same facts argued in the preceding petition were set forth as follows:

1. The absence of bridges over the Ohio River for a distance of approximately 12 miles upstream and downstream from the proposed site;

2. The difficulty, delay, danger and frequent impossibility of crossing;

3. The effect of such interference with travel and intercourse upon the development of the county; and

4. The extent and importance of this section of the county divided by the Ohio River.[8]

It is interesting to note that the petition included a drawing of the proposed structure and surrounding topography. The proposed location for the bridge was generally where it stands today. However, the type of main span shown was that of a suspension bridge.[9]

In reviewing the petition, the court appointed a new Board of Viewers, one of whom was Charles Davis, then County Engineer. In early December, 1906, the viewers recommended to the court that a bridge should be constructed at the existing site, but since the cost would be greater than it was reasonable for Sewickley Borough and Moon Township to bear, they recommended that the County bear the total cost.

The Court accepted the Viewers' recommendations on 6 December 1906 and on 17 December 1906, the Grand Jury gave their approval. These approvals finally provided the County Commissioners with the authority to construct the bridge. However, approval for actual construction did not come immediately. The County Court records show that a number of counter petitions were filed by Mr. W. H. S. McKelvey who owned property at the Sewickley end just to the west of the proposed structure. These suits delayed actual construction work by approximately two years.

Preliminary surveys were made during the spring and summer of 1906 to fix accurately the length of the spans and locate the piers and abutments.

The approval of the then Secretary of War, the Honorable William F. Taft, was next required. On 28 June 1907, the Secretary appointed a Board of three Government Engineers to view the site and examine the plans for the proposed bridge. On 6 February 1908, the Secretary issued the building permit and on 10 April 1908, the County Commissioners filed their concurrence with the

Court of Quarter Sessions and appropriated funds for construction in the following year.

Some important facts that appeared to have strongly influenced the County Commissioners in assuming the expense of the bridge were that there was no highway bridge over the river above Rochester which is 25 miles below Pittsburgh; Sewickley is approximately midway between Rochester and the Point in Pittsburgh; Sewickley and Coraopolis are the largest towns on the Ohio River in Allegheny County; and also the bridge would be a connecting link between the most admirably improved road systems on either side of the river.[10]

Consummation and Approval

The contracts for the construction of the bridge were awarded on 2 July 1909 to the Adam Laidlaw Company for $98,907.25 for the masonry, and to Fort Pitt Bridge Works for $372,400.00 for the superstructure. The time limit set for completion was 30 November 1910.[11]

The County Engineer in charge of the design was Mr. J. G. Chalfant, while Mr. V. R. Covell was his Deputy, and Mr. A. A. Anderson was his assistant. Mr. Charles Davis, who preceded Mr. Chalfant, was in charge of preliminary designs but died on 21 February 1907.[12]

The Sewickley Bridge is a 9-span steel truss structure with a total length of 1,852 feet, 7 inches and a lateral width of 32 feet between centerlines of trusses.

The approach spans at each end of the bridge consist of 3 simple span Warren-type pony through trusses (Dimensioned Drawing 2, Page 120).

The main river bridge over the river channel is a 3-span cantilever through truss structure with 300-foot long end anchor spans and a 750-foot long center span. In the center span a 350-foot long simple span is suspended between the free ends of the 200-foot long trusses cantilevered out from each main river pier (Dimensioned Drawing 2, Page 120).

The original details were designed for a 28-foot vehicular roadway with two streetcar tracks astraddle the centerline and 6-foot pedestrian sidewalks on brackets outside of the trusses (Dimensioned Drawing 3, Page 121).

Originally the structure passed over railroad tracks only at its south end and connected a 2-lane asphalt road at the south end to the paved street system at the north or Sewickley end (Dimensioned Drawing 5, Page 123).

A Jubilee Celebration inaugurating the first step in the construction on the bridge was held in Sewickley on 21 July 1909, with Burgess W. K. Brown of Sewickley, and Burgess A. D. Guy of Coraopolis breaking ground for the approaches.[13]

The structure was officially opened to traffic on 19 September 1911.

III. HISTORY OF DESIGN AND CONSTRUCTION

Design

Final surveys, designs and contract plans were prepared by Allegheny County under the direction of Mr. J. G. Chalfant, County Engineer. The contract plans consisted of 27 drawings showing loadings, member makeups, general details and arrangements of all parts of the substructure and superstructure. Of these original drawings, only Sheet 1 of 27, showing soundings, topography and location for the bridge, has been located (Dimensioned Drawing 5, Page 123).

Records indicate that the dimensions and elevations of the structure as shown on the County design drawings were rigidly followed (Figure 1, Page 63). The length of the channel span, alignment of the bridge with relation to river current, and the clearances above water were fixed to the regulations prescribed at that time by the Federal War Department.

The geometric outline and many of the general details of the main span trusses were similar to those of the then existing Wabash Railroad Bridge at Pittsburgh.[14] However, at Sewickley the floor system details were designed for highway rather than railroad loadings.

The initial floor system consisted of a 4-inch thick wood block pavement on a 1½-inch sand bed above a concrete filler slab, averaging about 3 inches thick, and supported by a 3/8-inch thick steel buckle plate turned down, over steel stringers and floorbeams. The sidewalks were reinforced concrete slabs with an average thickness of 5 inches supported by two lines of steel stringers.[15]

The substructure consisted of two abutments with wingwalls, four pairs of pedestals, two on each end, supporting the approach spans, two anchor piers and two main channel piers. All piers were sandstone faced and backed with gravel concrete. Granite bridge seats were provided under the main span tower bearings at Piers 2 and 3 (Dimensioned Drawing 4, Page 122).

The structure was designed for dead, live and wind loadings. The dead load included all superstructure components and details, including streetcar rails.

Separate live load assumptions were applied in the designing of the floor system and trusses. Floor system members were designed using either a uniform load of 100 pounds per square foot of clear roadway and sidewalk, a 15-ton road roller, a wagon load of 5-ton or two 50-ton streetcars in tandem. For the trusses, a live load of 1,600 pounds per lineal foot of truss was used for designing the main span and 2,000 pounds per lineal foot of truss was used for designing the approach span truss members.

A wind load of 35 pounds per square foot was applied to the exposed vertical surfaces of both trusses of the unloaded structure. This wind load was applied to both the main and approach trusses.[16]

There is no record of the actual type of steel used on the bridge but recorded allowable working stress information indicates that a structural carbon steel was used for all parts of the bridge including the forged eyebars.[17] Also, results of tests taken of sample specimens removed from the structure during subsequent in-depth inspections confirm this assumption.[18]

Foundation-Construction

As previously noted (Page 8 above) preliminary surveys made in 1906 were sufficient to fix accurately the length of the spans and locate the piers and abutments, from which final designs were made and grades established for the bridge and its approaches. The records indicate that in June of 1909 the centerline was monumented on both sides of the river and a triangulation system was developed for construction. It is also recorded that this survey was completed to a very high degree of skill and accuracy.[19]

It is important to note that some subsurface investigations were conducted prior to the foundation design and construction, although no original soils information is available. An account in a local periodical recorded the commencement of this phase of work as follows:

> "The soundings are being made in the river at the foot of Chestnut Street with a drill boat that a good foundation may be found for the new bridge, which will be erected during the next year. The drill boat, before being put to use, sprung a leak and sank and had to be raised before soundings could be made.[20]"

Piers 1, 2 and 3 are recorded as being founded on rock, approximately 30 to 35 feet below Elevation 684.4, the full pool elevation at that time. Cofferdams were used during the construction of these river piers and no unusual difficulties were encountered.

The northern anchor pier, No. 4, was founded on very dense clay and gravel at Elevation 706.4 about 20 feet above full pool elevation.[21] Pedestal and abutment footings appear to have been constructed in the dry and also rest on clay.

The bearings and anchorage details used at Piers 1 and 4 are important features of the bridge design (Dimensioned Drawing 6, Page 124) since these assemblies are subjected to uplift under normal dead loading and most lane loading and are also located at the expansion points in the superstructure. An eccentric ring detail was included in the hold-downs to provide the vertical adjustment needed to insure proper contact in the top of the expansion linkages. The hinged eyebar details provided for additional longitudinal adjustments during construction. The heavy lattice girders that are embedded within Piers 1 and 4 to which the bottom eyebars are attached were a result of uplift calculations made by the contractor. His calculations showed the superimposed masonry weights of the piers to the anchorages as originally designed were not adequate to resist the maximum design uplift loadings.

Superstructure Fabrication and Construction

The Fort Pitt Bridge Works, the superstructure contractor, began work immediately after the contract was awarded. Since the contract included both fabrication and construction of the superstructure, it was necessary to review the design in detail and from a practical standpoint to determine how it could be best adapted to their methods of operation in the drawing room, fabricating plant and in the field.

They first proceeded with careful reviews and some revisions of the estimated weights and dead loads and then made graphical analyses of the stresses and reactions (Figures 2 and 3, Pages 64 and 65). At that time a special squad of their own engineers and draftsmen was assigned to devote full time and attention to this particular job under the supervision of Mr. A. W. Buel, a private consultant especially hired for this work, and afterward retained, during construction, as Consulting Engineer.[22]

From the results of the graphical check analyses and other considerations, it seemed that the weight of that part of the anchor piers directly over the anchorage might possibly not have a sufficient margin of safety, and, if the greater part of the mass of masonry above the elevation of the anchorage could be made absolutely effective, there would be a considerable excess. As some progress had already been made on one of the anchor piers, any change in the anchorage had to be decided on immediately or serious delay would result. It was suggested, therefore, that heavy lattice girders, extending nearly the entire length of the pier, should be embedded in the concrete so as to bring practically the entire weight of the superimposed masonry into positive action to resist the uplift. This suggestion was adopted, with the incidental advantage of reinforcing the piers so that no danger of cracks need be apprehended.[23]

Further studies and stress computations resulted in additional recommendations for changing the original design of some of the bridge members. It was also contemplated in the preliminary planning that it might become desirable or necessary to make the anchor span at each end work as a simple truss supported only on the piers before the cantilever arm was erected.

The end posts and top chords of the anchor arms, from L_0 to U_8, as originally designed, consisted of eyebars packed inside and outside of two 28-inch built-up channels, latticed top and bottom.[24] These members would not have been adequate in this simple truss to support the required loads. Consequently, these chord members were revised and made entirely of built-up riveted sections which would carry all anticipated loads in both tension and compression (Figure 4, Page 66). Also, to make the anchor arm work as a simple truss, it was necessary to add temporary members, U_2-M_3 and U_4-M_5, and to increase the section for M_3-L_4 and M_5-L_6.

These changes in the top chords, the additional web members and the loads for construction requirements made it advisable to alter the design for the bottom chord sections from L_6-L_{14}. These members were changed from two built-up channels (with four 6"x6" angles) to two built-up I-sections (with eight 6"x6" angles). This reduced the unsupported length of the top and bottom lattice bars so that flats could be used instead of channels or angles[25] (Figure 5, Page 67).

As the shop details were being developed, several features were incorporated to aid in simplifying the fabrication.

An effort was made to standardize the rivet spacing as much as possible. On the upper chord, U_6-U_7, which is typical (Figure 4, Page 66) all lattice bars, top and bottom, were made in two lengths without any special bars. This result was obtained by varying the rivet pitch slightly to compensate for the difference in dimensions between gage lines and by varying the length of the end tie plates. This plan was followed throughout the work, an effort being made to keep the lattice bars of the same length for all similar members and thus to avoid special bars.[26]

Contract plans called for lower chords to have double lattice bars top and bottom made from light channels. This produced a bad detail where they crossed and the channels were difficult to connect. An effort to find a satisfactory substitute without increasing the weight resulted in the use of single angles flattened at the ends where they connected with the main member and at the center where they crossed each other (Figure 6, Page 68). Tests showed that when the ends were flattened out the center of gravity of the angles was in the plane of the under side of the flattened portion.[27]

The tests also showed that the efficiency for the angles was from 30 percent to 50 percent greater than for the channels and the computations showed that it was due to the very small eccentricity of the angle connections.[28]

There was very little provision made for vertical adjustment of the structure during construction. The holes in the rocker links connecting the pin, L_0, in the bottom chord with the pin in the upper end of the anchor bars were not bored until after the anchor bars were in place. Elevations were then carefully taken on the upper pin holes in the anchor bars and the rocker linkages were bored to such lengths as were required to locate the truss pin, L_0, at the correct elevation.[29]

The trusses were shop assembled during fabrication and all pin holes bored as accurately as possible.

In this structure the buckle plates were designed to carry the loads normally carried by the bottom lateral bracing except at the hangers for the suspended span, where a shear lock is used to carry these loads from the suspended span to the cantilever arm.

This shear transfer device, worked out in the fabricator's drafting room, was one of two similar devices which were said to have been unique at that period of time (Figure 7, Page 69).

As the construction plans and procedures were developed it was determined which bridge members must be redesigned or reinforced to carry the additional loads from the materials and equipment scheduled to be used and supported on the structure during construction.

Shelf angles with supporting stiffeners were designed to carry the stringer reaction due to the locomotive crane working from the bridge floor.

Other construction loads were provided for when the design of the anchor span was changed to make it work as a simple truss.

Construction started at the north end or on the Sewickley side of the river.

The pony trusses for each simple half-through approach span were assembled on the ground and then hoisted into position with a 30-ton locomotive crane. The floor system was filled in between the trusses and the crane moved ahead on a track which was laid on the buckle plates and along the centerline of the bridge. As each span was completed, the crane moved ahead to repeat its previous operations on the subsequent span.

These approach spans could have been erected using various other types of equipment. However, the Contractor elected to use the 30-ton locomotive crane, which was located on the bridge floor, to erect the falsework and floor system for the anchor spans. Therefore, it was logical to use the same piece of equipment to erect the approach spans. After the third approach span was completed, the locomotive crane had only to be moved ahead to the anchor pier and it was in position to begin the falsework for the anchor span of the main structure.

The construction procedure for the anchor span floor system was similar to the procedure used for the approach spans. The locomotive crane was used to assemble and erect the timber falsework bents and bracing for one panel ahead of the crane. Then the floor system, which included floorbeams, stringers and buckle plates, was erected, bolted together and blocked to elevation on the falsework.

The track was then extended and the locomotive crane was moved ahead and secured in position to construct the next panel of floor system and its supporting timber falsework.

This procedure was repeated, progressively, from the anchor pier to Panel Point 18.

The falsework bents were built wide enough to carry standard gauge tracks running parallel to and outside of each truss. Each track of two steel rails on timber ties was carried between bents by four, 24-inch deep steel I-beam stringers with two stringers under each rail.

This track carried a traveling frame which was referred to as a gantry or wing traveler by the Contractor (Figure 8, Page 70).

The traveling frame served as a support for staging or platform for workmen, equipment, tools and materials. Rope falls or block and tackle were hung from the cross beams to lift the bridge members and set them in place.

This traveler was probably one of the first of this type that was made of steel. It was also made so it could easily be adapted for use in erecting other structures. Previously, "it was common practice to build a special timber traveler for each job.[30]"

The cross beams were not high enough to clear the towers so it was necessary to build another braced frame on top and to the rear of the traveler so the upper most members of the tower and the higher top chord members of the trusses could be lifted into position. Timber booms (Chicago booms) were also installed on the top vertical members to facilitate the construction. To complete the tower, the traveler had to be moved to the channel side of the cantilever pier. Then the traveler was moved ahead to complete the cantilever arm to Panel Point 18.

"As each successive panel was erected by the gantry traveler, from Panel Point 10 to Panel Point 18, the wedges were backed out at all points outside of the cantilever pier[31]" which gradually transfered the weight of the entire span from the falsework to the anchor and cantilever piers.

With the gantry traveler at Panel Point 18, a second movable frame or "cantilever traveler[32]" as it was called, was erected on the top chords over Truss Panels 16-17 and 17-18.

The cantilever traveler moved on a track laid on the upper chords and was used to complete the construction of the suspended span to Panel Point 23, which is at the center of the structure (Figures 9 and 10, Page 71).

With the suspended span erected to the center and with the cantilever traveler in its position nearest the center, the uplift at the anchor pier was maximum during construction and nearly equal to the maximum uplift for the finished bridge, with live load on the cantilever and suspended spans only. At this point the eccentric bushings in the shoes at the anchor pier were adjusted (Dimensioned Drawing 6, Page 124).[33]

The bushings were rotated to bring the base of the shoe into full bearing with the top of the pier. The bushings were then tap bolted to the web plates of the shoes. This arrangement kept the slack out of the connection when the reaction at the shoe changed from uplift to downward bearing with live loading only on the anchor spans.

After the cantilever traveler was erected, the gantry traveler and falsework were removed and taken to the other side of the river to be reused for erecting the south half of the bridge. The procedure used for constructing the south half of the structure was generally the same as that used for the north.

The suspended span was closed at the center by a method using toggle and wedge devices that had been used in cantilever construction during the ten year period prior to the time of this closure. The method was novel, but it was not unique for this particular operation.

". . . On May 15, 1911, the lower chord of the suspended span was closed by driving the pins at L23.[34]" (Figure 10, Page 71) The following day the top chord was closed and the remaining web and bracing members were filled in. During this closing operation, the toggle and wedge devices were adjusted, which redistributed the stresses in the structure and the two cantilevered halves of the center span became one simple truss span suspended on the hangers at Panel Points 16 North and 16 South.

"During the entire work of erection, nothing of consequence occurred which has not been foreseen and provided for. There were no losses of either men or material and no serious injuries were reported.

One man fell into the water, but was rescued without serious results.[35]"

Engineering and Technological Significance

The Sewickley Bridge is significant in that it is representative of the type of bridge that was being built at the turn of the century. Also, as explained above, some novel and special details were used on the Sewickley Bridge during its design and construction. At the present time the structure is in an extremely poor physical condition requiring the imposition of stringent vehicle load and speed restrictions. There are, however, other highway bridges in the area which are quite similar in style and design but are in much better physical condition.

The Ambridge-Aliquippa Bridge (Appendix A), formerly known as the Ambridge-Woodlawn Bridge, also crosses the Ohio River and is located approximately 5 miles downstream from the Sewickley Bridge. The Ambridge-Aliquippa Bridge was built by Beaver County in 1926-

1927 as a 2-lane structure approximately 1,908 feet long, consisting of 5 through truss spans, 2 deck girder spans and 1 pony truss span.

An inspection, in 1976, resulted in the posting of a 10-ton maximum vehicle loading restriction on the structure. The load restriction was imposed primarily because of the poor condition of the truss bearings.[36] It was also noted in the report for this inspection that all four of the adjustable redundant eyebar members in the suspended center span trusses were permanently bowed because the members were inadvertently placed in compression at some time during the history of the structure.

It is anticipated that the bridge will be rehabilitated for unrestricted loading. This could require the replacing of bearings and twisted eyebars and the repairing of miscellaneous floor system elements.

The Rochester-Monaca Bridge (Appendix A), also located in Beaver County, carries L.R. 76 over the Ohio River from Monaca on the south to Rochester on the north. It is approximately 13 miles downstream from the Sewickley Bridge. The structure, built in 1930 by Beaver County, is a four-span cantilever through truss bridge 2,160 feet long center to center of end bearings and supports a 28'-0 wide roadway and a 9'-0 wide sidewalk on the upstream side.

The structure is generally considered to be in good condition and capable of carrying the modern AASHTO HS20-44 loading.[37]

The Bellaire Highway Bridge (Appendix A) spans the Ohio River between Bellaire, Ohio and Benwood, West Virginia, approximately 82 miles downstream from the Sewickley Bridge. The bridge was built in 1925 by the Interstate Bridge Company, a private toll company who remains its present owner. The structure was built principally for local vehicular and pedestrian traffic between the immediate communities of Bellaire and Benwood. At the present time the bridge handles approximately two million vehicles per year.

The structure has always been a toll bridge with a major portion of the revenues received going toward maintenance and repairs. An in-depth inspection is made on the structure every 5 years. The structure is generally considered to be in good to excellent condition.

This bridge is almost an exact twin of the Sewickley Bridge except it is 100 feet shorter in total length and it is one-foot narrower.

IV. SUBSEQUENT HISTORY

Maintenance and Repairs

Allegheny County was responsible for designing and building the Sewickley Bridge and also, according to the records, was its original owner and completely responsible for all maintenance and repairs until 1961.

During the period from 1911 to 1962, the County maintenance records indicate that some money was spent each year for general repairs. These same records also show the major repair and maintenance work done during these years (Appendix C).

In 1929 the original wood block and sand bed roadway surface was replaced by a 3½-inch asphaltic binder course and a 2-inch asphaltic wearing surface. The structure was repainted in 1936, 1946 and 1954. During 1948 major repairs were undertaken which included replacing all of the expansion dams, rebuilding sidewalks, repairing concrete areas on both abutments, encasing the pedestal foundations at Bents 3 and 4, replacing the asphalt portions of the roadway surface and repairing and/or reworking both at-grade approach roadways.

In 1950 blast plates were added to the underside of the north anchor span truss over the railroad tracks adjacent to Pier 4. These plates have been since removed but there is no record showing when this work was done.

It is also noted that in 1913 the Pittsburgh Railways Company established regular streetcar service from Pittsburgh to Sewickley via Neville Island, Coraopolis and the Sewickley Bridge.

In 1928 the Pennsylvania Railroad tracks were relocated to the river bank passing under the north anchor span adjacent to Pier 4. Four years later the County reconstructed the north approach roadway of the bridge to intersect with Ohio River Boulevard.

Act 615 of the State Legislature in 1961 divided the bridge maintenance responsibility between Allegheny

County and the State. The complete bridge ownership and responsibility for maintenance were transferred from Allegheny County to PennDOT in 1969 by PUC Order No. 94264.

The County records show general maintenance money being spent until May, 1962. The State records show that the state spent money for painting and repairs in 1964, 1965 and 1972 through 1974 (Appendix C).

An in-depth inspection was performed in 1969 for the State. The inspection revealed that the main structural components of the bridge were in fair condition but elements of the approach trusses and main span floor system were deteriorated and overstressed.

The inspection report recommended replacing the sidewalks, sidewalk supports and expansion dams; repairing abutments, piers, floor system drainage system, main trusses and bridge railings; and complete cleaning and painting of all steel elements of the bridge. As a result of this inspection the bridge was posted with a restriction that all trucks be spaced a minimum of 100 feet apart while on the structure.

The painting performed on the structure in 1972 through 1974 had to be discontinued when a section of sidewalk slab collapsed on 30 May 1974. Immediately afterwards the bridge was closed to pedestrian traffic and the concrete sidewalk slabs on both sides of the bridge were removed. This same condition, with exposed steel sidewalk framing, currently exists.

In August, 1975, the bridge was field inspected by engineers from the Federal Highway Administration and from the District and Central Offices of PennDOT. Because of the critical corrosion conditions discovered at the ends of several eyebars and at numerous floorbeam connections, the decision was made in 22 August 1975, to post the bridge for 3 tons maximum load; and on 20 April 1976, the bridge was posted for 10 mph speed limit.

From 2 August 1976 to 1 October 1976, PennDOT performed an in-depth field inspection of the bridge.

The Department also made a load rating analysis of the structure along with rehabilitation recommendations with estimated costs. As a result of this work the bridge was closed to all traffic on 30 January 1977, with the recommendation that emergency repairs be made that would allow the bridge to be reopened to maximum 3-ton traffic for a limited period of time (1 to 3 years) until a more permanent solution could be completed.[38]

Early in March, 1977, Pennsylvania Governor Shapp ordered the temporary repairs be made and on 20 May 1977 with the repairs completed the span was reopened to traffic with a 3-ton maximum vehicle load limit and a speed restriction of 10 miles per hour.

Changes in Surroundings

Since the completion of the Sewickley Bridge in 1911, there have been many changes in the immeaiate area of the structure and in the surrounding communities.

The Borough of Sewickley itself has generally retained its stature as an affluent residential community with a population of approximately 6,300 persons, the number it has maintained closely since its centennial celebration in 1940.[39] The Sewickley Heights area, originally known for its fine farms, has been transformed into exclusive residential estates.

A number of important events that have changed or influenced the development of Sewickley appear to be those that are closely aligned to the changes in the immediate area of the Sewickley Bridge. The Pittsburgh Railways Company in 1913 established regular service from Pittsburgh to Sewickley following a route through Neville Island and Coraopolis and over the Sewickley Bridge. This new route to Pittsburgh also provided a direct commercial link to the adjacent industrial community of Coraopolis and to the shipyards at Neville Island and Leetsdale.

The Dashield Dam, located approximately one mile downstream from the bridge was completed in 1929.

This structure raised the pool of the river and caused the elimination of the popular recreational beach areas located on the north shore of the river in the immediate vicinity of the bridge.

The Pennsylvania Railroad track relocation in 1928 permitted the reconstruction in 1932 of a new north approach to the bridge on a much more direct and desirable and eliminated the railroad at-grade crossing that had existed. The improved connections with existing streets and roads also encouraged more vehicular and truck traffic to use the bridge.

The opening in 1952 of the Greater Pittsburgh Airport in Moon Township created a rapid increase in population in the surrounding area and generated increasingly heavy traffic over the bridge.

However, the recent opening in 1977 of the new Glenfield Interchange of the Interstate 79 river crossing at Neville Island, located approximately 3 miles upstream, should somewhat reduce the heavy traffic load on the Sewickley Bridge.

Physical Condition of Structure

The physical condition of the Sewickley Bridge is so poor that it was necessary to temporarily close the span to all traffic on 30 January 1977, until emergency repairs could be made. These items of emergency repair include the rehabilitating of the eyebar diagonals at four panel points on the suspended span and the eyebar anchorages at Piers 1 and 4, the reinforcing of floorbeam connections at 25 locations on the main truss spans and the reinforcing of 23 pony truss members on the approach spans. The bridge was reopened on 20 May 1977 for restricted usage.

The estimated cost of completely rehabilitating the existing structure is $4,750,000. However, the renovated structure would be restricted to a maximum vehicle load of 5 tons and have a life expectancy of 20 years.

Excessive corrosion with attendant metal losses has occurred in all spans to the majority of the superstructure members and details primarily in the area below the roadway deck. The masonry portions of the structure have fared better with the only serious deterioration occurring at the North Abutment and at Anchor Pier 4 where some extensive cracking is visible.

The entire steel superstructure above the apron plates on all spans has been recently painted and presently appears to be in good condition with little or no signs of corrosion. However, close inspections of the individual members indicate some material losses occurred prior to the painting.

The floor system members and connection details below the deck level appear to have suffered the greatest corrosion losses through the years and require the most extensive temporary repairs to keep the bridge open. However, corrosion losses in both the approach and main span truss members are more difficult and expensive to repair, and because of less redundancy in the members, required the imposition of load restrictions. The principle cause of the heavy corrosion appears to be the accumulation and splashing of dirt, debris, deicing chemicals and water at the deck level through the open curb and onto the majority of the panel points in the trusses (Dimensioned Drawing 7, Page 125).[40]

The most critical problem existing on the main span are as follows:

1. The deterioration of the floorbeam end connections which required the field installation of new reinforcement plates at 25 of the most critical locations (Appendix E, Page 115).

2. The corrosion and/or rusting through of the top and bottom flange angles and lacing on the built-up truss bottom chords (Appendix B, Pages 82 and 83).

3. The accumulation of dirt, debris and water at almost all bottom chord panel points (Appendix B, Page 86).

4. The necessity for reinforcing four diagonal eyebar truss members due to the severe losses at the ends (Appendix B, Page 85 and Dimensioned Drawing 7, Page 125).

5. The complete deterioration of all sidewalk support brackets and stringers (Appendix E, Page 112).

6. The deterioration of the surfaces and end connections of the majority of all curb stringers and random interior stringers (Appendix B, Page 86).

7. The "freezing up" of the expansion details at the four end anchorages and corrosion of the exposed portion of the hold down eyebars necessitating the addition of emergency hold down rods at all four locations (Dimensioned Drawing 6, Page 124).

8. The twisting and corrosion of the shear transfer details at floorbeam locations 16 and 30 (Figure 7, Page 69).

The structure contains a large number of eyebar tension members made from low carbon steel with forged heads. The eyebar is a design feature which was quite prevalent in highway bridge designs at the turn of the century and until the 1930's.

Eyebar tension members were also used extensively on the three bridges similar to the Sewickley Bridge, as previously described in this report. The same type low carbon steel eyebars were used on the Bellaire Bridge, an almost exact replica of the Sewickley Bridge, while heat-treated steel eyebars with higher working stresses were used on the Ambridge-Aliquippa and Rochester-monaca Bridges. However, none of the eyebar steels used on any of these bridges are nearly as susceptible to stress corrosion and corrosion fatigue as the heat-treated, high strength steel eyebars used on the Point Pleasant or Silver Bridge, which failed in West Virginia in 1967.

Even though the eyebars on the Sewickley Bridge do not appear to be nearly as fracture-prone as those used on the Silver Bridge, they must still be considered to be the weak links in the overall structural design. Charpy V-notch tests conducted by a testing laboratory on coupons removed from nonload eyebar members on the bridge indicate the steel does not satisfy by a wide margin the current fracture toughness requirements for ASTM A36 steel in the AASHTO Specifications. Until the emergency repairs were made on the bridge, the most critical condition appeared to exist at the low redundant, two eyebar, end anchorages. But because of the severe corrosion and inaccessibility of the eyebar heads at the lower chord panel points of the trusses, critical fatigue cracks could have already developed or could be developing in all of these corroded eyebars. Before these potential failure points can be discovered and monitored, it would be necessary to disassemble and inspect the truss eyebar members intersecting at each suspected lower chord truss joint. This would probably require the dismantling of the entire bridge which would be illogical.

The logical alternative is the current posted 3-ton live load limitation on the Sewickley Bridge which maintains the eyebar stresses below the critical level. There is also some additional built-in redundancy in these fracture-critical members which are built up from a minimum of four eyebars.

The most critical problems found in the approach spans are the corrosion losses on the bottom chords of the truss members (Appendix B, Page 81), which required the addition of reinforcing plates at 23 random locations. The bearings on the pony truss bents at the south approach are also heavily corroded and the expansion details are "frozen."

The steel bents at the south approach display a general random material loss and rusting through of lacing on all members. The bents on the north approach have had the most recent coating of paint and are in good condition. The concrete bases for all bents are generally sound.

During the last in-depth inspection of the structure it was also noted that the roadway surface was in a poor and hazardous condition. The wearing surface was generally cracked and separating and in many locations had completely broken down creating potholes, especially throughout the length of the main span. This deteriorated deck condition was remedied under the general emergency repair contract.

The existing wearing surface was completely removed from Bent 1 to Pier 4 and replaced with a specially formulated asphaltic mix to a maximum thickness of $1\frac{1}{2}$ inches. The deck surface replacement had to be done with special equipment weighing not more than 5 tons for stripping and not more than 7 tons for the placing and compacting. Asphalt supply trucks were not permitted on the structure.

The emergency closing and placing of the present load restrictions on the Sewickley Bridge were direct results of the inspection and structural rating analysis work, coupled with the results and conclusions from the laboratory tests made on steel specimens taken from the structure. Specific laboratory tests were made to determine the susceptibility of the material to fatigue and brittle fracture. From these tests the following was concluded: That neither the rolled steel section nor steel eyebar materials satisfy the fracture toughness requirements of the current AASHTO Specifications for temperature zone 2; that the most critical condition in the structure appears to be in the low redundant end anchorage eyebars where the heavy corrosion in the linkage eyebar connection and the apparent bending and axial forces that exist in the anchorage eyebar make this steel a prime target for brittle fracture; that truss member $M_{24}L_{22}$ appears to be a most likely location for fatigue crack growth because of the severe corrosion and the possibility that critical cracks already exist and that a 3-ton load restriction should prevent fatigue crack growth in the riveted truss members.[41]

Cultural, Social and Economic Significance

The Sewickley Bridge has linked the communities of Sewickley and Coraopolis for the past 66 years and generally has played a major role in the development of intracommunity ties and services.

Sewickley is essentially a residential community and supports several small service and specialty businesses. Coraopolis, also a residential community, is the area's commercial and industrial center. Even though the business districts in the two communities have decidedly different characteristics, each community has special attractions which draw customers and employees from both sides of the river.

Sewickley and Coraopolis share a number of human services that appear to have ignored the topographic boundary separation of the river. The communities are both served by one hospital and one two-station ambulance service. Mutual aid fire-fighting pacts exist between the two communities and both belong to the 11-municipalities Quaker Valley School District.[42]

It is therefore very important to note that when the Sewickley Bridge was closed in 1977 it created great disruptions in the economy of the communities and hampered the effectiveness of numerous community services. These losses have been reported in two separate studies conducted by local institutions. The one study was included in a report prepared on the bridge crisis in Allegheny County. This report presented the actual effects of the bridge closing on the community with a compilation of data from surveys and in terviews with local businessmen and residents of the area.[43] The other report was prepared to identify the number and magnitude of services which would be affected from the permanent closing of the Sewickley Bridge. This study provided an analysis of the effects the service losses might have on the area plus the additinal costs that probably would be incurred by each community if it continues to provide to its residents the present level of services, safety welfare and accessibility to services. This second study presented conclusions determined from in-depth personal interviews conducted with municipal and County officials, school superintendents, medical service directors and transportation directors.[44]

Both reports generally concluded that the Sewickley

Bridge is a critical link in the structure of the communities in the Ohio Valley. To eliminate the Sewickley Bridge means that new costs will be incurred in providing the present level of services and the safety and welfare of the residents and their accessibility to services will be jeopardized.

It is also important to note that the structure serves generally as a major artery for traffic from the airport and from the industries of the surrounding communities. It is anticipated the traffic will greatly increase in the coming years due to the planned expansions at the airport and the future growth of industry, especially at Neville Island.

Structure Replacement

On 22 April 1977, PennDOT District 11-0 received authorization to prepare alternative preliminary designs for a new bridge on the existing Sewickley Bridge alignment.

These preliminary designs were to include the utilization of the existing two main river piers and also maintain the basic configuration of the bridge as well as the existing horizontal and vertical navigation clearances under the bridge. The studies were to be made for various roadway widths, including a 7-foot sidewalk located on the upstream side.

In the early phases of the preliminary design studies the steel deck truss, steel deck girder and concrete deck girder bridge schemes were eliminated because they would not be practical. The necessary additional depths required over the piers in each case would require raising the existing 3 percent roadway grade to an undesirable 6 percent or higher in order to maintain the existing vertical clearance under the structure. The additional dead load weight of the concrete girders would also overload the existing river piers.

A steel tied arch type bridge was not seriously studied because of the tangent alignment with no flared ramps and because of the existing conditions which are most adaptable to a 3-span continuous main structure. The tied arch and necessary approach structures would also undoubtedly be more expensive than the continuous structures.

The through-truss type of bridge was selected as the logical basis for making the most extensive preliminary design as it is a very economical type of construction, most closely fits the existing pier locations and river clearance requirements and appears to be the most acceptable configuration to the community. The preliminary design summaries include the costs of all the work that would be required for construction of the truss with various roadway widths with a reinforced concrete deck slab. An additional study was made for these trusses using a concrete filled 5-inch deep steel grid decking with 1-inch thick latex overlay.

A cable stayed girder bridge construction was also studied and preliminary designs were done using the same criteria as noted above. Under this scheme the two existing river piers and south end pier would be reused while the north end pier would be rebuilt.

The cable stayed girder bridge was designed for bridges with both reinforced concrete and orthotropic plate decks.

The preliminary design study also required additional investigative work which consisted of the following: field surveying and preparation of maps of both approach areas; establishing limits of required new right-of-way; determining what public utilities would be affected; suggesting alternate routes for detouring traffic during construction; taking underwater cores at the existing two river piers; and determining demolition and construction completion schedules. Also included was the investigation of the cost of possibily using a roll-in type construction.

The results of these preliminary studies were compiled into a report submitted on 5 July 1977, to PennDOT for their review.[45] A 32-foot wide roadway has been approved.

FOOTNOTES

[1] Eleanore W. George, "Sewickleyana," Sewickley Centennial (Sewickley Centennial Committee, 1940), pp. 5-8.

[2] Ibid., Front sheet to "Sewickleyana".

[3] Interview with Mrs. B. G. Shields, President, Sewickley Historical Society, Sewickley, Pennsylvania, 1 December 1977.

[4] "Story of the Bridge," Souvenir Program Sewickley-Coraopolis Bridge Celebration, (Sewickley: Sewickley-Coraopolis Bridge Celebration Committee, September 1911), P. 15.

[5] Stephen C. Foster, Famous composer of folk music.

[6] "Story of the Bridge", Souvenir Program, pp. 21, 25.

[7] Ibid., pp. 29-54.

[8] Court of Quarter Sessions of Allegheny County, Petition of the residents of the Borough, Sewickley and Moon Township to have bridge erected over the Ohio at Sewickley, 1906.

[9] Ibid., Attachment to the petition.

[10] "The New Bridge", Souvenir Program Sewickley-Coraopolis Bridge Celebration, (Sewickley: Sewickley-Coraopolis Bridge Celebration Committee, September 1911), p. 57.

[11] Ibid.

[12] Ibid., p. 58.

[13] Ibid.

[14] A. W. Buel, "The Sewickley Cantilever Bridge Over the Ohio River," American Society of Civil Engineers Transactions, Vol. LXXVI, No. 1255, (New York: American Society of Civil Engineers, December 1913), pp. 585, 587.

[15] Ibid., p. 587 (See Figure 2).

16 Ibid., p. 590.

17 Ibid., pp. 590 & 591.

18 Richardson, Gordon and Associates, In-Depth Inspection Report L.R. 652 SPUR Sewickley Bridge over the Ohio River, February 1977, Appendix E.

19 A. W. Buel, "The Sewickley.....River," ASCE Transactions, p. 586.

20 Sewickley Herald, 12 December 1908, p. 4.

21 A. W. Buel, "The Sewickley . . . River," ASCE Transactions, p. 588 and p. 589.

22 Ibid., p. 592.

23 Ibid.

24 Ibid., p. 593.

25 Ibid., p. 594.

26 Ibid., p. 597.

27 Ibid., p. 600 (See Table).

28 Ibid., p. 601.

29 Ibid., p. 598.

30 Ibid., p. 592.

31 Ibid., p. 607.

32 Ibid., p. 593.

33 Ibid., p. 598.

34 Ibid., p. 594.

35 Ibid., p. 597.

36 Michael Baker, Jr., Inc., Eyebar Investigation, Ambridge-Aliquippa Bridge, July 1976.

[37] Green Engineering Company, <u>In-Depth Inspection Report Rochester-Monaca Bridge</u>, October 1969.

[38] Richardson, Gordon and Associates, <u>In-Depth . . . Ohio River</u>, February 1977, Letter of Transmittal, p. 2.

[39] Eleanore W. George, "Swickleyanna," p. 76.

[40] Richardson, Gordon and Associates, <u>In-Depth . . . Ohio River</u>, February 1977, pp. 13-26.

[41] Ibid., Appendix E.

[42] Carnegie Mellon University, Graduate School of Urban and Public Affairs, <u>An Assessment of the Bridge Crisis in Allegheny County</u>, Pittsburgh: Carnegie-Mellon University Press, May 1977, Chapter 7.

[43] Ibid., pp. 101 and 102 (See Table).

[44] Pennsylvania Economy League Inc., <u>The Sewickley Bridge A Critical Link</u>, Pittsburgh: Pennsylvania Economy League Inc., October 1977.

[45] Richardson, Gordon and Associates, Preliminary Design Report Sewickley Bridge Over the Ohio River Allegheny County, 5 July 1977.

[46] Gloria G. Berry, Reflections of the Sewickley Bridge, (Sewickley: The Committee to Save the Sewickley Bridge, 1977), Chronology.

APPENDIX A

SIMILAR STRUCTURES

Figures 1 and 2 . . . Ambridge-Aliquippa Bridge

Figures 3 and 4 . . . Rochester-Monaca Bridge

Figures 5 and 6 . . . Bellaire Bridge

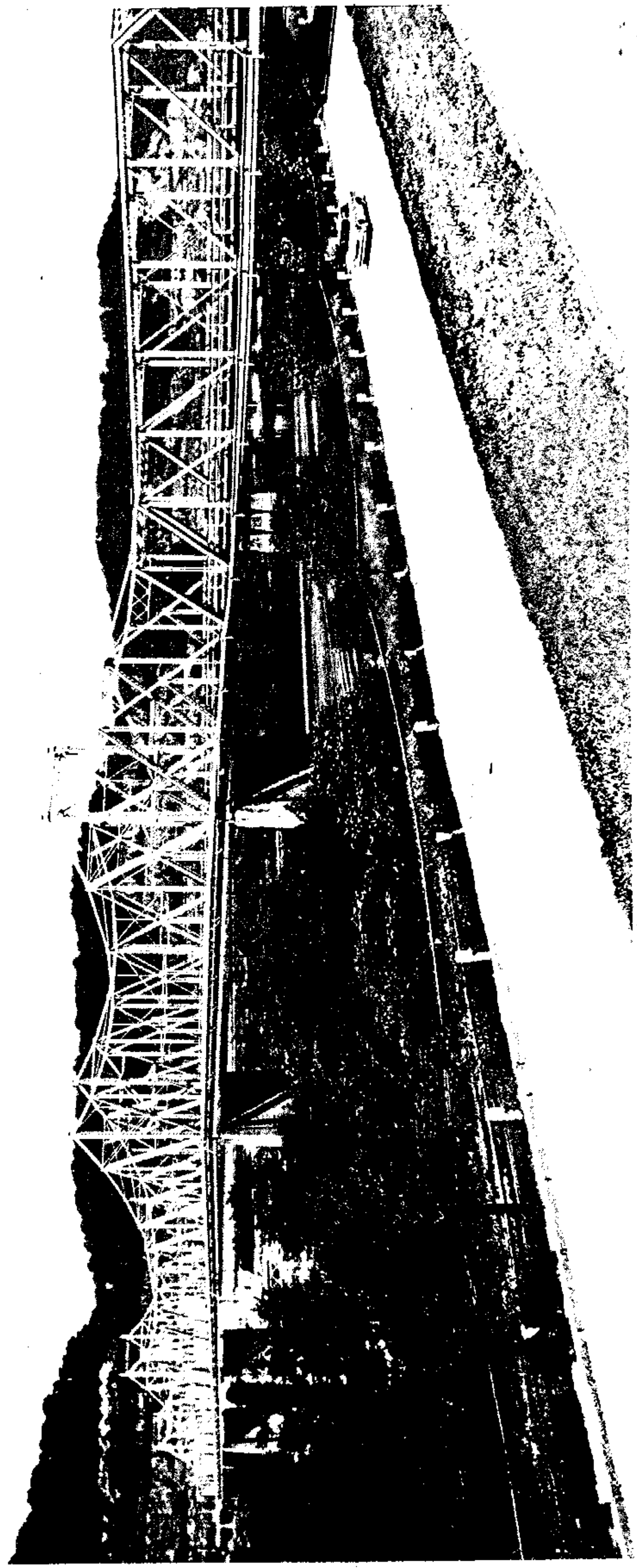


Figure 1 Pictorial View of Ambridge - Aliquippa Highway Bridge
(Source Unknown)

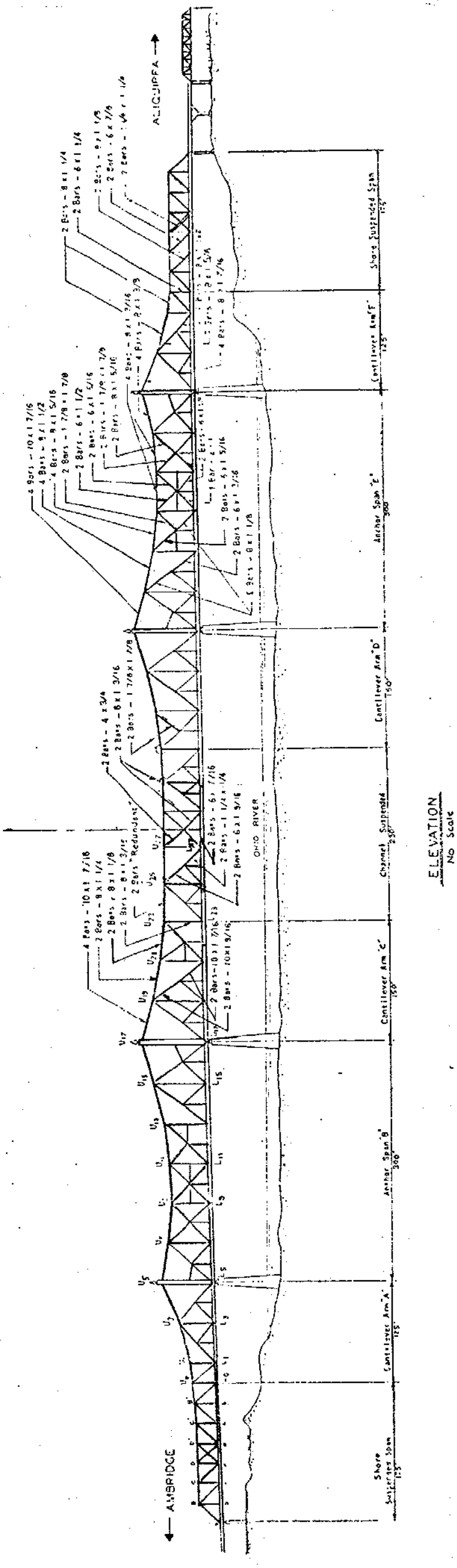


Figure 2 Structure Elevation of Ambridge - Aliquippa Highway Bridge
(Source Unknown)

Figure 3 Pictorial View of Rochester - Monaca Highway Bridge
(Source Unknown)

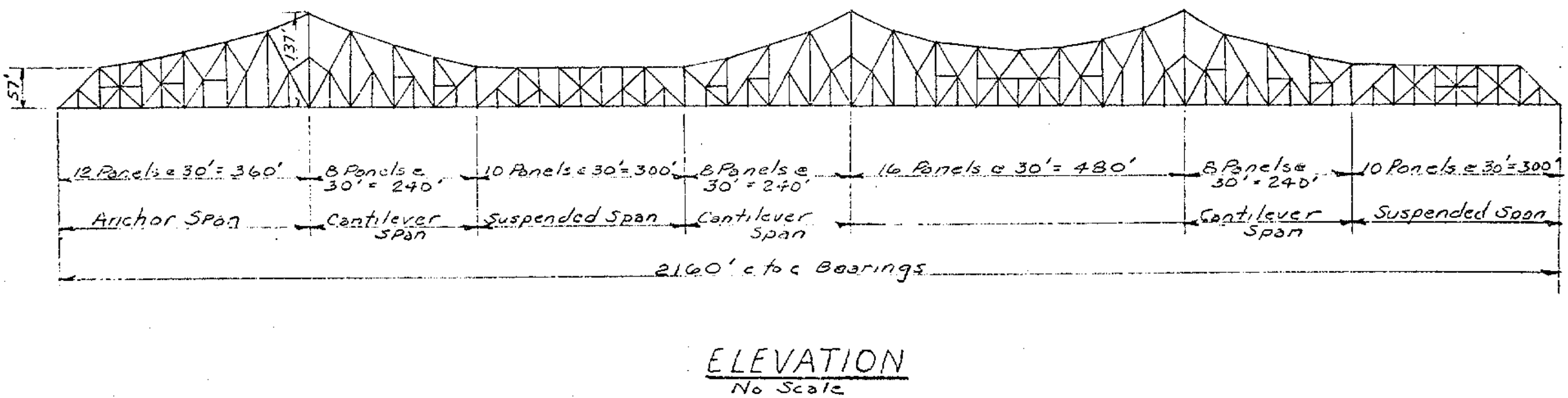


Figure 4 Structure Elevation of Rochester - Monaca Highway Bridge
(Source Unknown)

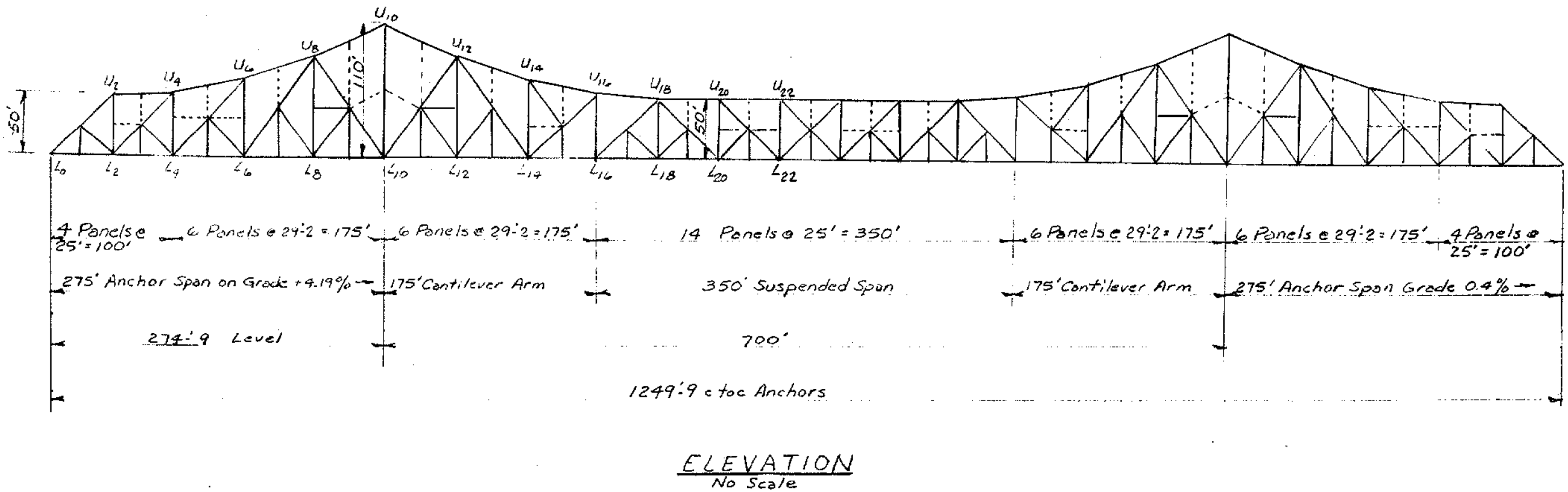


Figure 6 Elevation of Bellaire Highway Bridge
(Source Unknown)

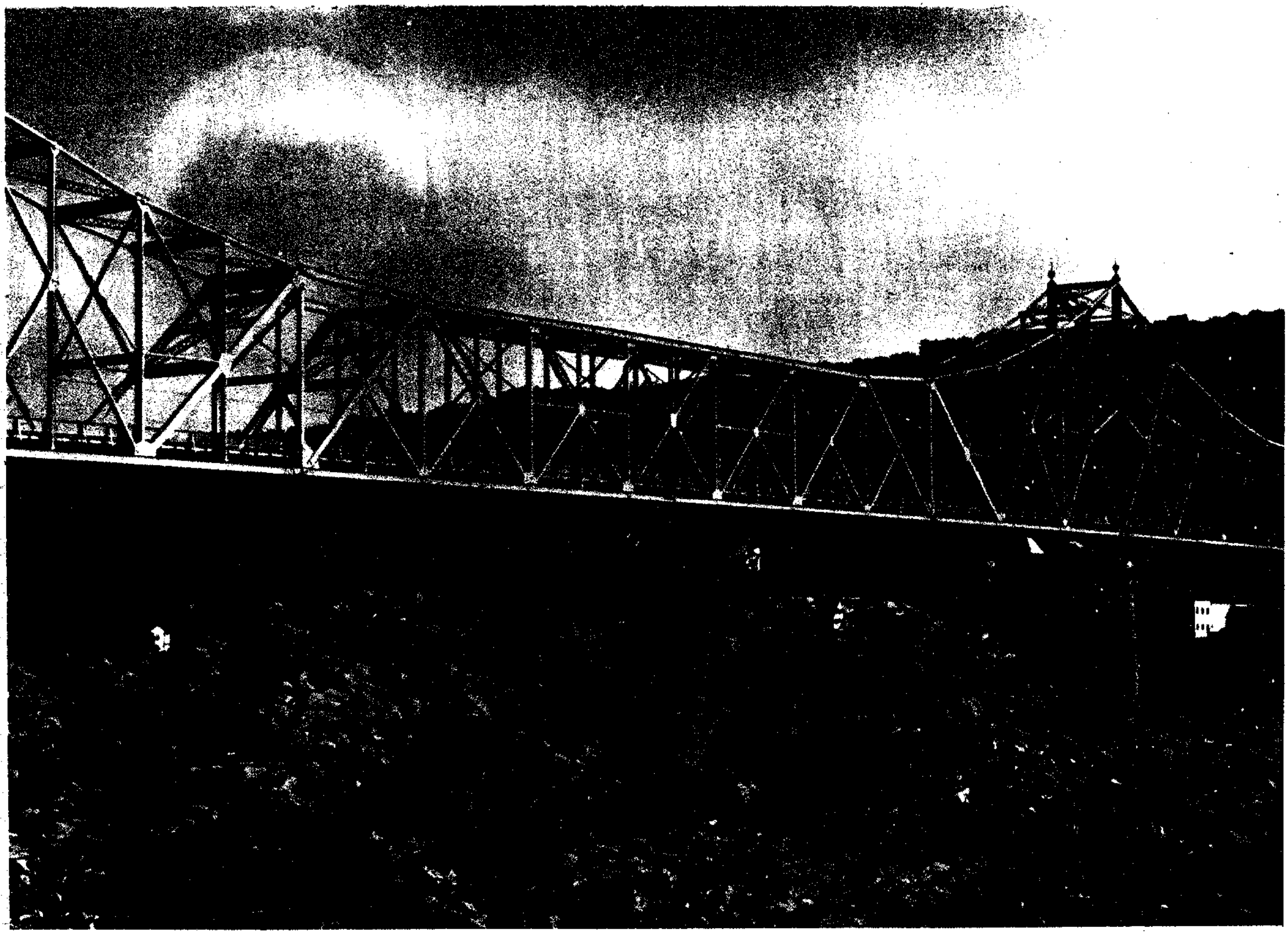
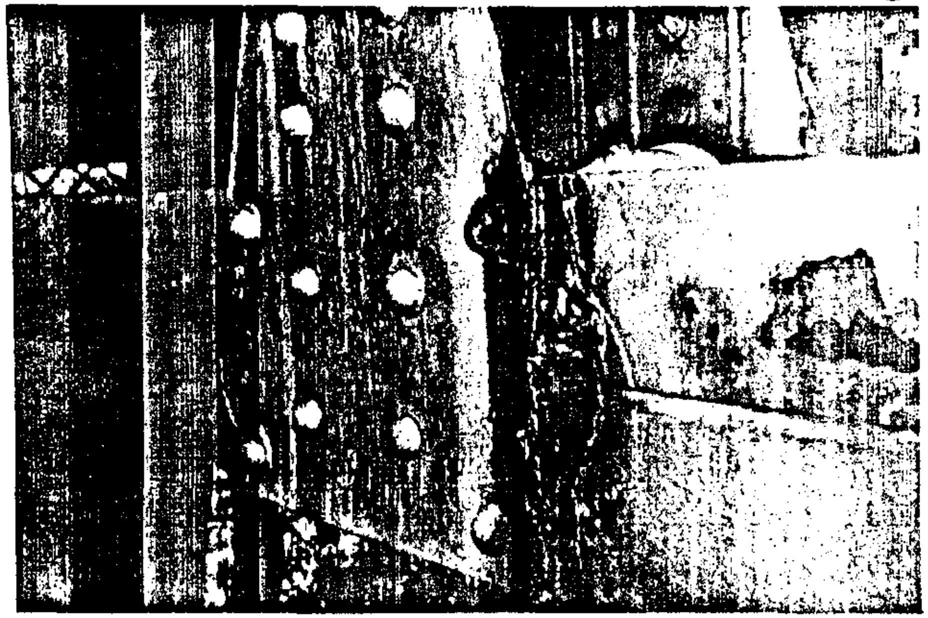


Figure 5 Pictorial View of Bellaire Highway Bridge
(Courtesy Pennsylvania Department of Transportation, 12/22/77.)

APPENDIX B

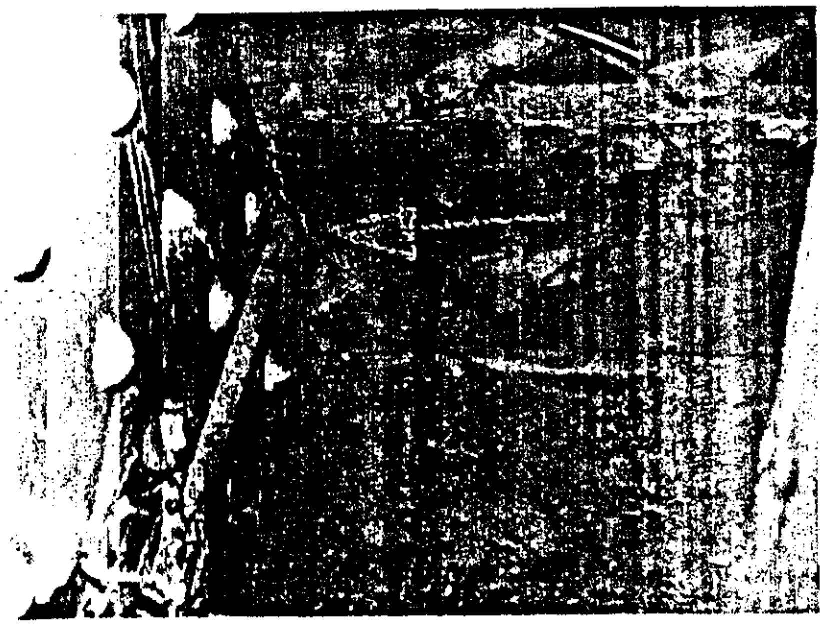
INSPECTION REPORT PHOTOGRAPHS

Span 1, West Truss, bottom chord, p.p. L6. Look south. Photo A7.

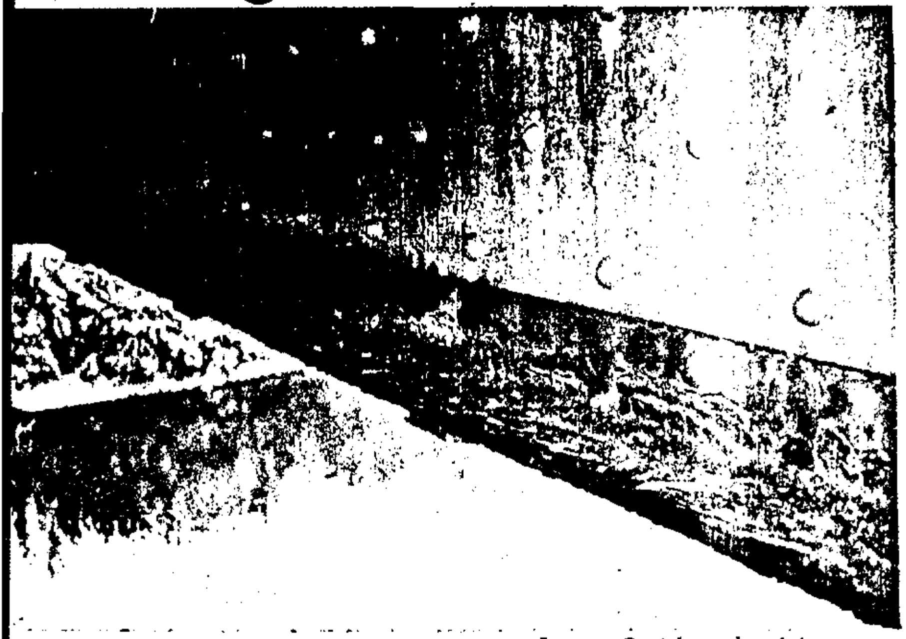


Span 3, West Truss, bottom chord, p.p. L1. Look north. Photo D8.

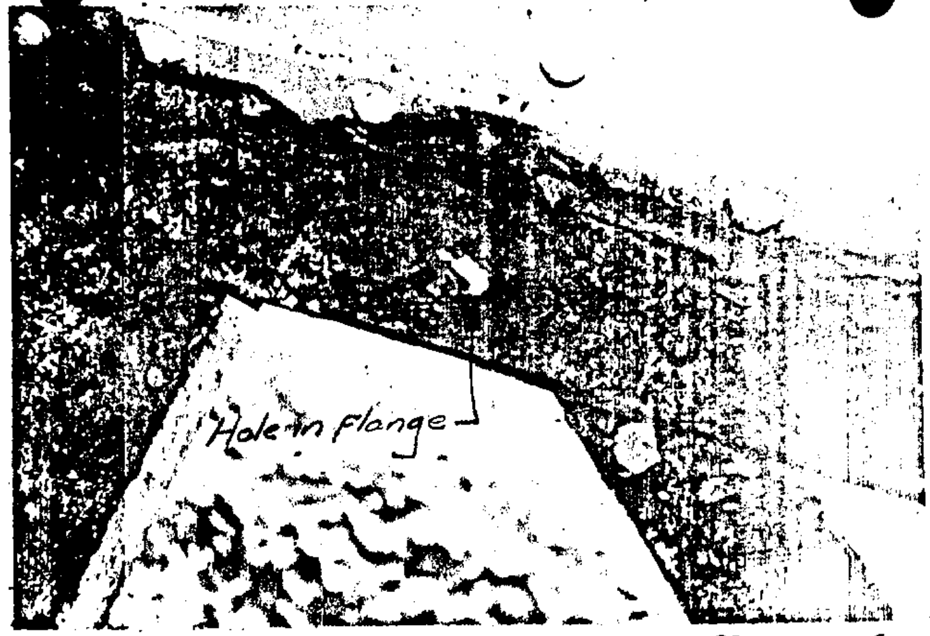
Span 8, West Truss, bottom Chord, p.p. L7. Look north. Photo B7.



Span 3, north end strut jammed into wing plates of east main shoe on Pier 1. Look south. Photo D10.

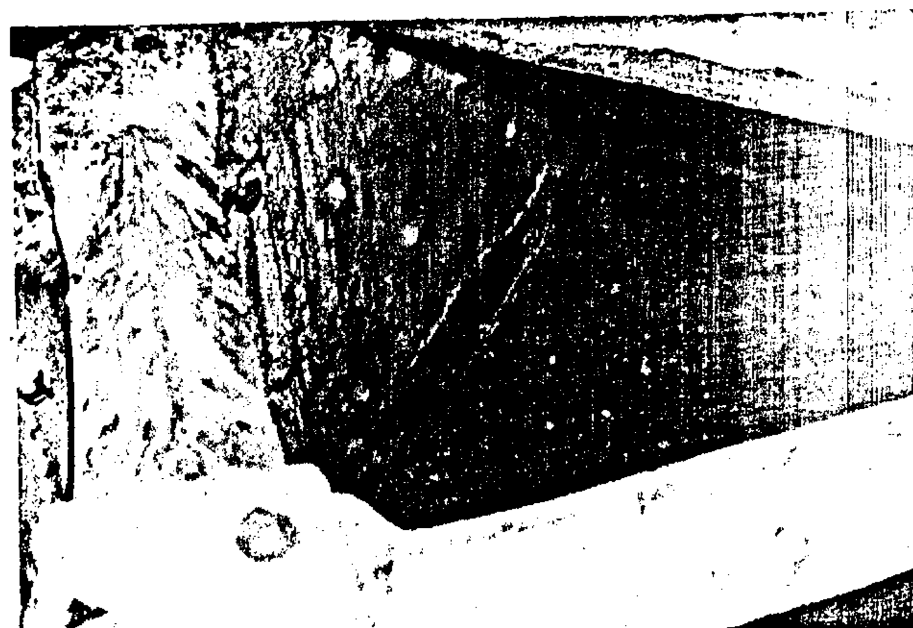


Vest most bottom flange angle of the bottom chord, east truss Span 5 p.p.L31-L32. Photo C13.

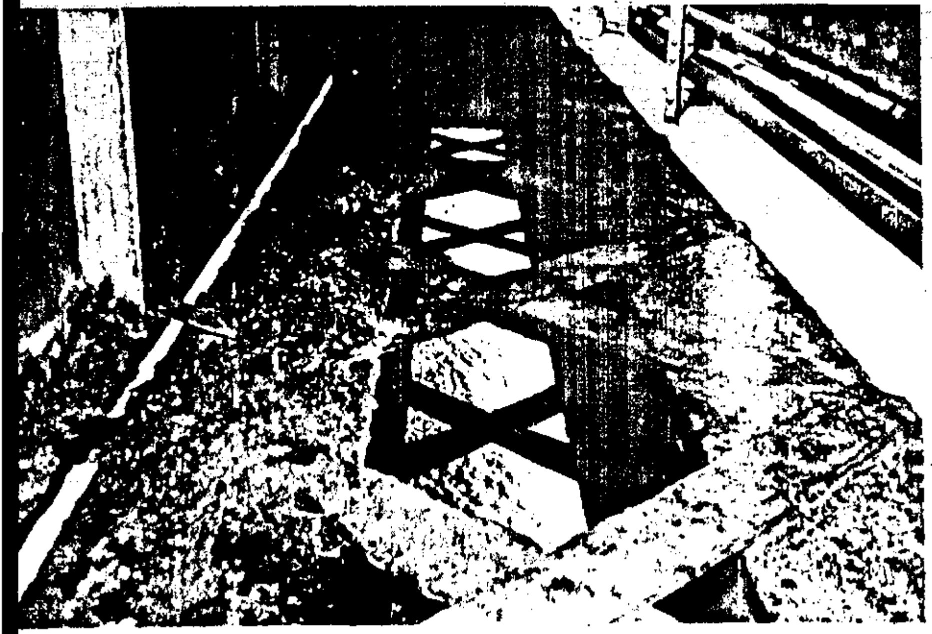


Bottom flange east angle west most flange of the bottom chord, east truss, north of p.p.L12. Photo K8.

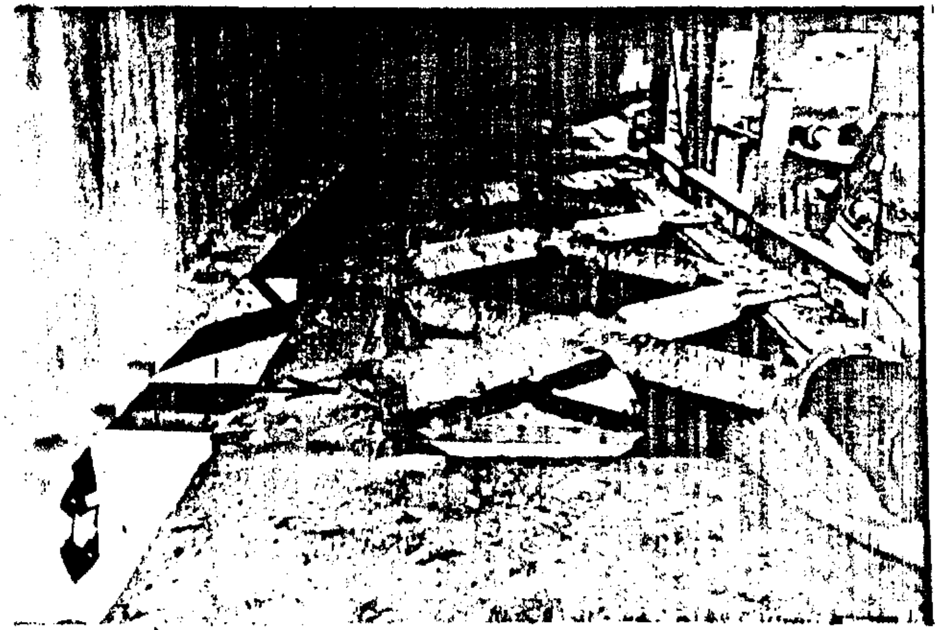
Bottom flanges inside angles for the bottom chord, east truss, north of p.p.L32. Photo K12.



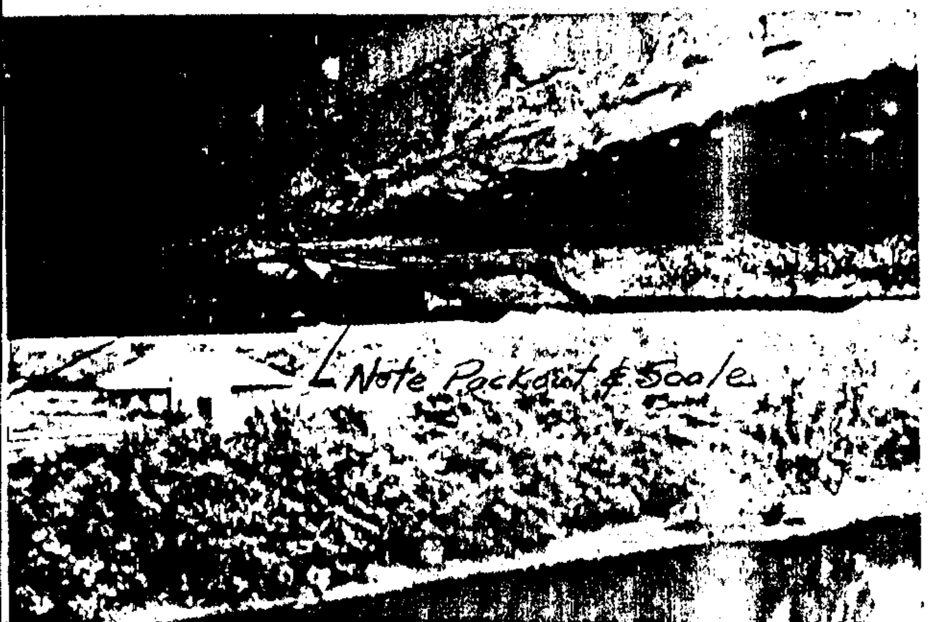
Bottom chord inside surface of the west web, east truss, south of p.p.L5. Photo G20.



Top lacing bottom chord, east truss between p.p.L13L14. Photo K1.



Top lacing bottom chord, east truss between p.p.L30L31 (note separation in lacing). Photo C17.

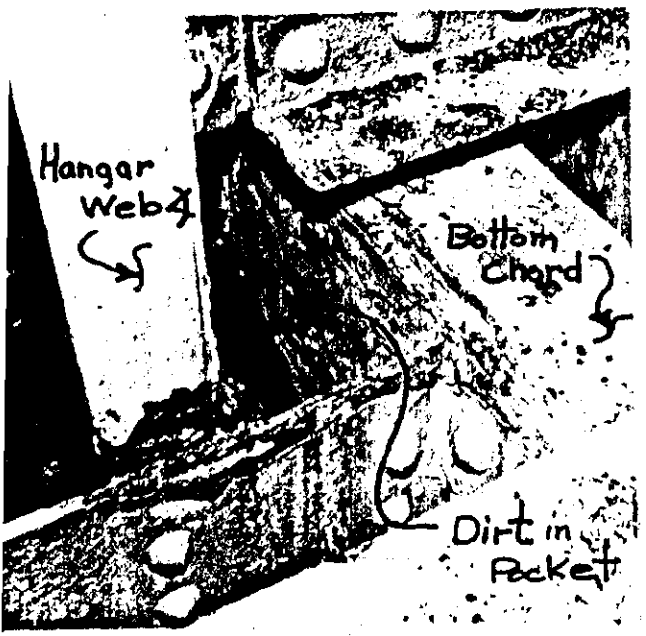


Bottom lacing connection, bottom chord, east truss between p.p.L31L32. Photo C15.

Top west flange bottom chord, east truss between p.p.L18L19 (note packout between

ast truss, p.p.L14 north side,
est web of post (see J10).
ook south. Photo J8.

East truss, p.p.L17 south side, post angle at
west web. Look north. Photo J18.



East truss bottom chord at p.p.
L17 (note debris & corrosion)
Photo K3.

West truss at p.p.L43 west web of vertical
(note hole in web). Photo L12.

East truss, p.p.L22 south side, diagonal eyebar marked "d", thickness = 1/2". Look down and north. Photo F1.

East truss, p.p.L22, look up and south from "float". Head "b" = 1/2" thickness. Photo F2.

East truss, p.p.L24 south side, east end of joint, packout at post and diagonal webs. Photo F3.

East truss, p.p.L24, look up and south at knife-edged head of eyebar "C". Photo F11.


North side of Floorbeam FB31 connection to the east truss Span 5. Photo C12.


Bottom flange of Floorbeam FB7 at connection to east truss (typical condition). Photo G1.


South side of Floorbeam FB30, look up at stringer seat, web loss of 5/16". Photo D7.

APPENDIX C

MAINTENANCE AND REPAIR RECORD

SEWICKLEY BRIDGE
MAINTENANCE AND REPAIR RECORD

DATE	DESCRIPTION	CONTRACTOR	COST
(ALLEGHENY COUNTY)			
1943	Maintenance	County	$801.33
1944	Maintenance	County	2,347.22
1945	Maintenance	County	967.93
1946	Maintenance	County	1,176.46
1946	Cleaning & Painting	Alliquippa Painting Co.	20,500.00
1947	Maintenance	County	373.76
1947	Traffic Signals	Martin and Maverset	1,750.00
1948	Maintenance	County	831.57
1948	Resurfacing & Structural Repairs	Harrison Const. Co.	124,700.00
1949	Maintenance	County	734.20
1950	Maintenance	County	5,570.75
1951	Maintenance	County	504.70
1952	Maintenance	County	10,321.55
1953	Maintenance	County	1,141.70
1953	Materials Contracts	County	3,306.31
1953	Maintenance	County	2,601.42
1954	Cleaning & Painting	McGinity & Hathaway	30,995.00
1954	Material Contracts Requ. #5627	County	2,522.48
1955	Maintenance	County	1,935.97
1956	Maintenance	County	3,831.60
1957	Maintenance	County	5,133.58
1958	Maintenance	County	6,071.24
1959	Maintenance	County	3,943.23
1960	Maintenance	County	5,480.09
1961	Maintenance	County	4,786.12
1962	Maintenance	County	1,492.35

SEWICKLEY BRIDGE
MAINTENANCE AND REPAIR RECORD

DATE	DESCRIPTION	CONTRACTOR	COST
(PENN DOT)			
1964	Painting Group 11-A31	City Painting Co.	$3,700.00
1965	Painting Group 11-A35	George Kazel Painting Inc.	125,000.00
1972	Painting Group 11-72-2	Stuart Painting Co.	107,500.00
	Work Order	Stuart Painting Co.	126,678.00
1974	Sidewalk Removal "Emergency"	Mosites Const. Co.	61,700.00
1977	Emergency Repairs	American Bridge Co.	250,000.00

APPENDIX D

CHRONOLOGY

CHRONOLOGY
SELECTED HISTORICAL EVENTS

1894	- November 24	- A "Call" for a public meeting.
	- December	- Committees formed to petition for a bridge at Sewickley.
1895	- January	- Subsequent meetings.
	- Spring	- Bridge committee petitions Common Plea Court No. 2 in Allegheny County for a bridge .
	- Summer	- County Commissioners hold meetings with bridge committee, interested citizens, and local officals from Sewickley and Coraopolis.
	- Fall	- County Commissioners deny request for new Sewickley-Coraopolis Bridge.
1897	- January 22	- Vehicular bridge between Rochester and Monaca opens for traffic.
1906	- November 12	- New petition presented to the Court of Quarter Sessions of Allegheny County.
	- December 6	- Court of Quarter Sessions accepts recommendation of Viewers to construct the Bridge.
	- December 17	- Grand Jury approves project giving the County Commissioners the authority to construct the Bridge.
1907	- June 28	- Honorable William F. Taft, Secretary of War appoints Board of Government Engineers to examine plans and proposed bridge site.
1908	- February 6	- Secretary Taft issues building permit for construction of Sewickley Bridge.
	- April 10	- County Commissioners file Concurrance with Court of Quarter Sessions and appropiate funds for construction in 1909 of a new Sewickley Bridge.

1909 - July 2 - Contracts issued for masonry (Piers) to Adam Laidlaw Company for $98,907.25; for superstructure to Fort Pitt Bridge Works for $372,400.00. Completion date set . . . November 30, 1910.

- July 21 - "A Jubilee Celebration" Construction begins on bridge.

1911 - September 19 - The opening of the Sewickley Bridge.

1913 - Pittsburgh Railways Company establishes streetcar service Pittsburgh-Sewickley.

1928 - Pennsylvania Railroad moves tracks to river bank.

1929 - Dashields Dam completed.

- Original wood deck replaced with new asphaltic wearing surface.

1932 - October - New north approach to Sewickley Bridge opens.

1936 - March - Sewickley Bridge withstands major flood.

- 25 year old Sewickley Bridge repaired and painted.

1948 - Major repairs are made on the Sewickley Bridge.

1952 - Greater Pittsburgh Airport opens.

1961 - Allegheny County shares with Penn DOT the maintenance responsibility of the Sewickley Bridge.

1969 - Penn DOT takes over ownership and total maintenance responsibility of the Bridge.

- Green Engineering Company makes in-depth inspection of Bridge for Penn DOT and recommends repairs.

1974 - Painters walk off job, as concrete sidewalk falls from bridge.

- Penn DOT closes sidewalks and removes sidewalk slabs.

1975 - Federal Highway Administration and Penn DOT officials inspect the Bridge.

- Penn DOT posts the Bridge for three (3) ton load limit.

1976 - Penn DOT posts the Bridge for 10 MPH speed limit.

- Summer - Richardson, Gordon & Assoc. makes an in-depth inspection of the Bridge for Penn DOT.

- September 3 - The new I-79 Bridge at Neville Island opens.

1977 - January 28 - I-79 Bridge cracks and is closed by Penn DOT.

- January 30 - Sewickley Bridge is closed by Penn DOT.

- March - Governor Shapp orders emergency bridge repairs.

- April 22 - Richardson, Gordon and Assoc. authorized by Penn DOT to make preliminary designs for a new Bridge.

- May 20 - Sewickley Bridge reopens with restrictions (3 Ton weight limit, 10 miles per hour).[46]

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